WHAT IS CLAIMED IS:

1. A method for forming a supported palladium membrane used for hydrogen purification and production, comprising steps of:

providing a support;

filling said support with a metal;

electroless plating a palladium membrane on said support with a palladium salt solution; and

DC sputtering an additional palladium membrane further on said support.

2. The method according to claim 1 wherein said support is a porous stainless steel support.

3. The method according to claim 2 wherein said porous stainless steel support is prepared by steps of:

mechanically polishing said support by one of an abrasive paper and an ultrasonic vibration;

electro-polishing said support;

acid-washing said support with 8~10 N HCl; and

activating said support at 40~60℃.

4. The method according to claim 1 wherein said metal is one selected from a group consisting of palladium, niobium, tantalum and a combination thereof.

5. The method according to claim 1 wherein said metal is a hydrogen permeable fine metal powder.

6. The method according to claim 5 wherein said metal powder is mixed with one of a palladium paste and a high temperature epoxy resin.

7. The method according to claim 1 further comprising a step of polishing said support after said metal filling step.

8. The method according to claim 7 wherein said polishing step is

performed by an abrasive paper.

9. The method according to claim 1 wherein said palladium salt solution contains 4.2~5.4 g/L $Pd(NH_3)_4Cl_2$, 60~74 g/L EDTA, 600~700 g/L NH_4OH and 0.32~0.4 c.c./L NH_2NH_2.

10. The method according to claim 1 wherein said electroless plating is performed for 120~360 minutes.

11. The method according to claim 1 wherein said electroless plating is performed at 50~70℃.

12. The method according to claim 1 wherein a target of said DC sputtering is 99~99.9% palladium.

13. The method according to claim 1 wherein said DC sputtering is performed under a vacuum pressure of 10^{-2}~10^{-5} torr and a power input of 200~500 W at 25~250℃.

14. The method according to claim 1 wherein said DC sputtering is performed for 60~120 minutes.

15. The method according to claim 1 wherein said palladium membrane has a thickness of 3~30 μm after said DC sputtering.

16. The method according to claim 1 further comprising a step of annealing said palladium membrane at 450~550 ℃ under a nitrogen atmosphere including 3~10% hydrogen for 4~8 hours.

17. A method for forming a supported palladium membrane used for hydrogen purification and production, comprising steps of:

providing a support;

filling said support with a metal; and

electroless plating a palladium membrane on said support with a palladium salt solution.

18. A method for forming a supported Pd/Ag membrane used for hydrogen purification and production, comprising steps of:

providing a support;

filling said support with a metal;

electroless plating a palladium membrane on said support with a palladium salt solution;

electroless plating a silver membrane on said support with a silver salt solution;

annealing said palladium membrane and said silver membrane to form a Pd/Ag membrane; and

DC sputtering an additional Pd/Ag membrane further on said support.

19. The method according to claim 18 wherein said support is a porous stainless steel support.

20. The method according to claim 19 wherein said porous stainless steel support is prepared by the steps of:

mechanically polishing said support by one of an abrasive paper and an ultrasonic vibration;

electro-polishing said support;

acid-washing said support with 8~10 N HCl; and

activating said support at 40~60℃.

21. The method according to claim 18 wherein said metal is one selected from a group consisting of palladium, niobium, tantalum and a combination thereof.

22. The method according to claim 18 wherein said metal is a hydrogen permeable fine metal powder.

23. The method according to claim 22 wherein said metal powder is mixed

with one of a palladium paste and a high temperature epoxy resin.

24. The method according to claim 18 further comprising a step of polishing said support after said metal filling step.

25. The method according to claim 24 wherein said polishing step is performed by an abrasive paper.

26. The method according to claim 18 wherein said palladium salt solution contains 4.2~5.4 g/L $Pd(NH_3)_4Cl_2$, 60~74 g/L EDTA, 600~700 g/L NH_4OH and 0.32~0.4 c.c./L NH_2NH_2.

27. The method according to claim 18 wherein said silver salt solution contains 0.2~1 g/L $AgNO_3$, 60~74 g/L EDTA, 600~700 g/L NH_4OH and 0.32~0.4 c.c./L NH_2NH_2.

28. The method according to claim 18 wherein said electroless plating is performed at 50~70℃.

29. The method according to claim 18 wherein a target of said DC sputtering is a Pd/Ag alloy with a weight composition ratio of 77/23~60/40.

30. The method according to claim 18 wherein said DC sputtering is performed under a vacuum pressure of 10^{-2}~10^{-5} torr and a power input of 200~500 W at 25~250℃.

31. The method according to claim 18 wherein said step of annealing said palladium membrane and said silver membrane is performed at 450~550℃ under a nitrogen atmosphere including 3~10% hydrogen for 4~8 hours.

32. The method according to claim 18 wherein said palladium membrane has a thickness of 3~30 μm after said DC sputtering.

33. A method for forming a supported Pd/Ag membrane used for hydrogen purification and production, comprising steps of:

providing a support;

filling said support with a metal;

electroless plating a palladium membrane on said support with a palladium salt solution;

electroless plating a silver membrane on said support with a silver salt solution; and

annealing said palladium membrane and said silver membrane to form a Pd/Ag membrane.